

Search in collections of mathematical articles

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Abstract

© 2018, Springer International Publishing AG, part of Springer Nature. In this paper we analyze an approach to semantic search of the mathematical expressions, allowing to perform queries and seek for the mathematical formulae by textual names of the variables contained in the formulae. We propose the method of establishing relations between textual definitions of variables and formulae containing these variables. Marked up formulae are related via noun phrases to the concepts of mathematical ontology. We describe software implementation of semantic search in mathematical documents. We also discuss ways to increase the search efficiency by improving accuracy of noun phrases extraction and establishing relations between these entities and formulae. The research showed the general efficiency of the method and a high percentage of relevant relations established.

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Keywords

Formulae mark up, Mathematical knowledge, Ontology extraction, Semantic search

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